

the posterior wing is another, smaller, oblique wing, of a few cells bent backward. Wall cells between these two wings are also pavement-like. Orifice of bladder very narrow, circular, situated at centre on top between the wings, so that the ascending pavements lead to it. The orifice is continued into the bladder as a conical tube hanging down from the roof and opening at the apex. Around this, the inner surface of bladder wall bears a few 4-rayed absorptive hairs lifted upon slender stalks. The rest of the inner surface is naked. Outer surface of bladder as well as other parts bear short vesicular cells joined to a small cell on the body by a very small cubical cell.

Cyclops, rotifers, and diatoms were found inside many bladders. Absence of sensitive hairs and trap-doors suggests that the victims fall inside the bladder accidentally. The oblique wings and the ascending paths between them lead the victims crawling on the surface, straight into the precipitous orifice. Escape from within the bladder is virtually impossible, because the exit is at the apex of a hanging tube. The 4-rayed hairs at the base of the tube also prevent free access to the exit.

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23. PRESERVATIVES FOR FRESHWATER ALGAE

Different algal workers use different fluid preparations for preserving algae for taxonomic purposes. West & Fritsch (1927) recommend 2-4% formalin as a preservative. According to Smith (1950) the simplest preservatives are 2-4% formalin or a mixture of formalin, acetic acid, and alcohol. Prescott (1951) prefers formalin aceto-alcohol and Transeau's Solution with glycerine as preservatives. For preserving the green colour of the algae, Keefe's Solution (Keefe, 1926) is supposed to be the most satisfactory.

It was thought worth while to make a comparison by preserving the same algae in different preservatives for some time. Fresh collections of *Volvox* sp., *Chaetophora* sp., *Oedogonium* spp., *Pithophora* sp., *Cladophora* sp., *Rhizoclonium* sp., *Spirogyra* spp.,

Cosmarium spp., *Closterium* spp., *Nitella* sp., *Euglena* spp., *Trachelomonas* spp., *Anabaena* spp., *Aulosira* sp., *Gloeotrichia* spp., *Oscillatoria* spp., and *Lyngbya* spp. were made for this purpose during September to December 1957 from Bombay and its environs.

Each alga was preserved in triplicate in the following nine preservatives: (1) Transeau's Solution or Six-three-one Solution (six parts water, three parts 95% alcohol, one part formalin), (2) Transeau's Solution with 5 c.c. of glycerine per 100 c.c. of solution, (3) 4% formalin, (4) 4% formalin with 5 c.c. of glycerine per 100 c.c. of solution, (5) 2% formalin, (6) 2% formalin with 5 c.c. of glycerine per 100 c.c. of solution, (7) Formalin-aceto-alcohol (formalin 5 c.c., glacial acetic acid 5 c.c., 50% alcohol 90 c.c.), (8) Mixture of formalin, acetic acid, and alcohol (glacial acetic acid 30 c.c., formalin 65 c.c., and 50% alcohol 1000 c.c.), (9) Keefe's Solution (50% alcohol 90 c.c., formalin 5 c.c., glycerine 2.5 c.c., copper chloride 10 gm., uranium nitrate 1.5 gm.).

The algae were preserved, after a careful microscopical examination, in specimen tubes of borosil glass with cork stoppers, and were examined after five years. It is found that there is not much difference in the preserving capacity of the first eight preservatives mentioned above. However, formalin-aceto-alcohol is slightly better for most of the Chlorophyceae and particularly desmids. 2-4% formalin with or without glycerine slightly dissolves the colonial mucilage of *Gloeotrichia* spp. but apparently has no effect on the mucilage of *Chaetophora* sp. Keefe's Solution is good for preserving the green colour of some of the Chlorophyceae like *Pithophora* sp., particularly the akinetes, *Volvox* sp., *Cladophora* sp., and also of *Euglena* spp., but it gives an unnatural colour to other Chlorophyceae. This solution also gives an unnatural colour to the members of Cyanophyceae. In all the preservatives except Keefe's Solution the material occasionally gets black, possibly owing to the reaction of the cork stopper.

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